Leonardo's Prime Factors

Leonardo loves primes and created q queries where each query takes the form of an integer, n. For each n, he wants you to count the maximum number of unique prime factors of any number in the inclusive range $[1, n]$ and then print this value on a new line.

Note: Recall that a prime number is only divisible by 1 and itself, and 1 is *not* a prime number.

Input Format

The first line contains an integer, q, denoting the number of queries.
Each line i of the q subsequent lines contains a single integer, n.

Constraints

- $1 \leq q \leq 10^5$
- $1 \leq n \leq 10^{18}$

Output Format

For each query, print the maximum number of unique prime factors for any number in the inclusive range $[1, n]$ on a new line.

Sample Input

```
3
1
2
3
```

Sample Output

```
0
1
1
```

Explanation

For the third query ($n = 3$):

1. The number of unique prime factors of 1 is 0; the only factor of 1 is itself, and 1 is not prime.
2. The number of unique prime factors of 2 is 1; the factors of 2 are 1 and 2, and 2 is prime.
3. The number of unique prime factors of 3 is 1; the factors of 3 are 1 and 3, and 3 is prime.

When we take the maximum of 0, 1, and 1, we get 1. Thus, the maximum count of prime factors for any number in the range $[1, 3]$ is 1, so we print 1 as our third line of output. You can also use this information to understand why the respective answers for $n = 1$ and $n = 2$ (i.e., the first two queries) are 0 and 1.